

July 2, 2018

AEP-NRC-2018-44
10 CFR 50.73

Docket No.: 50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Donald C. Cook Nuclear Plant Unit 2
LICENSEE EVENT REPORT 316/2018-003-00
Unit 2 Manual Reactor Trip Due to High-High Moisture Separator Drain Tank Level

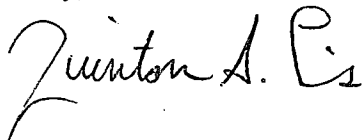
In accordance with 10 CFR 50.73, Licensee Event Report (LER) System, Indiana Michigan Power Company, the licensee for Donald C. Cook Nuclear Plant Unit 2, is submitting as an enclosure to this letter the following report:

LER 316/2018-003-00: Unit 2 Manual Reactor Trip Due to High-High Moisture Separator
Drain Tank Level

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Director, at (269) 466-2649.

Sincerely,



Q. Shane Lies
Site Vice President

SJM/ml

Enclosure: Licensee Event Report 316/2018-003-00: Unit 2 Manual Reactor Trip Due to
High-High Moisture Separator Drain Tank Level

1E22
NRR

c: R. J. Ancona – MPSC
A.W. Dietrich – NRC Washington, DC
MDEQ – RMD/RPS
NRC Resident Inspector
K. S. West, NRC Region III
A. J. Williamson – AEP Ft. Wayne

Enclosure to AEP-NRC-2018-44

Licensee Event Report 316/2018-003-00

Unit 2 Manual Reactor Trip Due to High-High Moisture Separator Drain Tank Level



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Donald C. Cook Nuclear Plant Unit 2

2. DOCKET NUMBER

05000316

3. PAGE

1 OF 3

4. TITLE

Unit 2 Manual Reactor Trip Due to High-High Moisture Separator Drain Tank Level

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	07	2018	2018	003	00	07	02	2018	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
		<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
		<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
		<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL 30		<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
		<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
		<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
		<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
		<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Michael K. Scarpello, Regulatory Affairs Director

TELEPHONE NUMBER (Include Area Code)

(269) 466-2649

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On May 7, 2018, Unit 2 was operating at approximately thirty percent power following completion of a refueling outage. The control room staff received a high-high level alarm in a moisture separator drain tank (MSDT) and manually tripped the reactor in accordance with plant procedures. Plant systems responded as expected. The plant was stabilized in hot standby conditions.

An investigation discovered condensate heater level column isolation valves were inadvertently left closed and not restored following system testing activities. This condition resulted in a loss of level control in the corresponding heater. Excess condensate could not drain from the heater and eventually backfilled through a steam supply line into the MSDT. This caused the drain flow capacity of the MSDT to be exceeded which resulted in corresponding high and high-high level alarms. The level column isolation valves were later returned to the open position which restored the condensate drain flow paths and cleared the alarms.

The manual reactor trip caused actuation of the Reactor Protection System and an automatic actuation of the Auxiliary Feedwater System. Therefore, the event is reportable as a Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(iv)(A), "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)."

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME		2. DOCKET NUMBER		3. LER NUMBER		
Donald C. Cook Nuclear Plant Unit 2		05000316		YEAR	SEQUENTIAL NUMBER	REV NO.
				2018	003	00

NARRATIVE**EVENT DESCRIPTION**

On May 7, 2018, Unit 2 was operating at approximately thirty percent power following completion of a refueling outage. The control room staff received a high-high level alarm in the left moisture separator drain tank (MSDT)[SN][TK] and manually tripped the reactor [RCT] as required by plant annunciator response procedure. The plant trip was not complicated, as plant systems responded as expected. The plant was stabilized in hot standby conditions.

Event Notification 53387 was submitted to the Nuclear Regulatory Commission as required by 10 CFR 50.72(b)(2)(iv)(B) due to the Reactor Protection System [JC] actuation and 10 CFR 50.72(b)(3)(iv)(A) for the automatic actuation of the Auxiliary Feedwater System [BA].

Analysis of the Event

On May 6, 2018, Unit 2 was at approximately eleven percent power and in the process of starting up from a refueling outage. Later in the shift following synchronization of the turbine generator [TG], and with the plant holding at approximately thirty percent power for chemistry analysis, a high-high level alarm activated on the MSDT. Actions were taken to lower the MSDT level to clear the alarm but were unsuccessful, which prompted staff to manually trip the reactor in accordance with procedures.

Following the plant trip, an investigation discovered condensate heater [SD][HX] level column isolation valves [V] were inadvertently left closed and not restored following system testing activities. The isolated level columns and associated sensors resulted in a loss of level control in the heater. Excess condensate could not drain from the heater due to a false normal level indicated in the isolated condensate heater level columns that prevented the alternate drain valve from opening. Condensate level increased, filled the heater, and backfilled through a steam supply line and eventually into the MSDT. This caused the drain flow capacity of the MSDT to be exceeded, which resulted in corresponding high and high-high level alarms. The condensate heater level column isolation valves were returned to the open position which restored the condensate drain flow paths and cleared the alarms.

ASSESSMENT OF SAFETY CONSEQUENCES**Nuclear Safety**

The event is characterized as a plant trip following an alarm, with no safety mitigation equipment out of service. The Unit 2 plant response to the manual trip was not complicated. Manual actuation of the Reactor Protection System functioned as expected. Automatic actuation of the Auxiliary Feedwater System functioned as expected. Rapid transfer of the electrical busses from the Auxiliary Transformers [EL][XFMR] to Reserve Feed [EA] functioned as expected. Probabilistic Risk Assessment of the event determined it to have very low safety significance.

Industrial Safety

There was no actual or potential industrial safety hazard resulting from the Unit 2 manual reactor trip.

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CONTINUATION SHEET**

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Donald C. Cook Nuclear Plant Unit 2	05000316	2018	003	00

Radiological Safety

There was no actual or potential radiological safety hazard resulting from the Unit 2 manual reactor trip.

No radiological release resulted from this event.

CAUSE OF EVENT

The direct cause was due to condensate heater level column isolation valves that were inadvertently left closed and not restored following completion of system testing. A formal causal analysis of the human performance aspects contributing to the plant trip is in progress at the time of this report. A supplement to this report will be provided if the evaluation will significantly change the reader's perception of the course, significance, implications, or consequences of the event, or, if it results in substantial changes to planned corrective actions.

CORRECTIVE ACTIONS**Completed Corrective Actions**

1. Human performance assessment and review of personnel and circumstances involved with the event.
2. Status control investigation of the valves that were out of expected position following testing activities.

Planned Corrective Actions

1. Revise plant project documents to include directions to validate systems are restored to desired conditions following completion of testing activities.
2. Create a case study training lesson plan on the MSDT high level trip event.

PREVIOUS SIMILAR EVENTS

LERs for CNP Unit 1 and Unit 2 were reviewed for the previous five years and found no similar events.